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PATENT
Attorney Docket No. 1267/US/7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:	
John R. KLUG et al.	Examiner: Sriram Chamnavajjala
Application No.: 90/006,940	Art Unit: 2177
Filed: February 17, 2004	Confirmation No.: 8906
For: REMOTE MULTIPLE-USER EDITING SYSTEM AND METHOD	

DECLARATION OF GARY J. NUTT UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

I, Gary J. Nutt, Ph.D., declare:

1. I am a Professor at the University of Colorado, Boulder, Colorado, in the Department of Computer Science. I have served on the faculty of the University of Colorado for twenty four (24) years (Assistant Professor, 1972-1978; Associate Professor, 1978; and Professor, 1986 to the present time), and I was the Chair of the Department of Computer Science from 1995 to 1997. As a faculty member, I have taught courses in and directed research in computer systems and software, operating systems, distributed and network systems, mobile computing, large storage systems, object oriented systems, and collaboration technology.

2. I received my doctorate degree in computer science in 1972 from the University of Washington, Seattle, Washington. I received my in master's degree in computer science in 1970, also from the University of Washington, Seattle, Washington. I received my undergraduate degree in mathematics in 1967 from Boise State University, Boise, Idaho.

3. I worked in the computer industry in various capacities. I was a research staff member of the Xerox Palo Alto Research Center (PARC) in Palo Alto, California, in 1978 to 1980; I was a senior member of technical staff of Bell Laboratories in Denver, Colorado in 1980 to 1981; I was an Engineering Director for NBI, Inc. in Boulder, Colorado in 1981-1984; and I

was a Vice President of Interactive Systems Corporation, Santa Monica, California, in 1984-1986.

4. I am the author of six books relating to computer science including: Distributed Virtual Machines: Inside the Rotor CLI, First Edition Addison Wesley, 2005, ISBN 0-321-15983-7; Operating Systems: A Modern Approach, Third Edition, Addison Wesley, 2004, ISBN 0-201-77344-9, 928 pages; Kernel Projects for Linux, Addison Wesley, 2001, ISBN 0-201-61243-7, 240 pages; Operating System Projects Using Windows NT, Addison Wesley, 1999, ISBN 0-201-47707-6, 250 pages; Centralized and Distributed Operating Systems, Prentice Hall, 1992, ISBN 0-13-122326-7, 418 pages; and Open Systems, Prentice Hall, 1992, ISBN 0-13-636234-6, 292 pages.

5. I co-authored an article with Clarence A. Ellis entitled "Office Information Systems and Computer Science," which published in ACM Computing Surveys (1980) and was reprinted in Computer-Supported Cooperative Work: A Book of Readings, 199-252, (Irene Greif ed., 1988).

6. I am familiar with the level of ordinary skill in 1989 for the computing industry as related to multiple user editing and collaboration computing systems, as described and claimed in United States Patent No. 5,799,320 which issued from an application filed on August 23, 1989. In my opinion, as of 1989, I possessed or exceeded the level of ordinary skill in the art of multiple user editing and collaboration computing systems.

7. According to my knowledge and belief, before and during the year 1989, personal computers (PCs) and workstations were both used in the computer industry.

8. Before and during the year 1989, the PC was understood by one having ordinary skill in the art to be a stand-alone device which included a central processing unit (CPU) and did not need to be connected to a network or any other computer to operate or to execute an application program. A PC was generally understood to include Basic Input Output System (BIOS) firmware or an equivalent.

9. In contrast, before and during the year 1989, one having ordinary skill in the art understood the term "workstation" to be a computer that differed from PCs in that workstations did not require BIOS firmware.

10. For at least these reasons, in my opinion, one having ordinary skill in the art in 1989 understood the term "workstation" to be functionally and structurally different than the term "personal computer."

11. The Declarant states that all of the above statements made of the Declarant's own knowledge are true, and that all the above statements made on information and belief are believed true. The Declarant further states that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Dated: August 23, 2004

Gary J. Hunt, Ph.D.

PATENT
Attorney Docket No. 1267/US/7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:	
John R. KLUG et al.	Examiner: Srirama Channavajjala
Application No.: 90/006,940	Art Unit: 2177
Filed: February 17, 2004	Confirmation No.: 8904
For: REMOTE MULTIPLE-USER EDITING SYSTEM AND METHOD	

SECOND DECLARATION OF GARY J. NUTT UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

I, Gary J. Nutt, Ph.D., declare:

1. I have reviewed the entirety of Computer-based Real-Time Conferencing Systems, Sunil Sarin and Irene Grief, Chapter 15 in *Computer-Supported Cooperative Work: A Book of Readings*, 1988 (hereinafter, "Sarin").

2. I have reviewed the entirety of U.S. Patent No. 4,953,159, which issued to Hayden et al., on August 28, 1990 (hereinafter, "Hayden").

3. I have reviewed the Responses filed by EdiSync Systems on 23 August 2004 and 22 December 2004 in the above identified Reexamination proceedings.

4. I have reviewed the Supplemental Response, which is being filed herewith by EdiSync Systems, in the above identified Reexamination proceedings.

5. I have reviewed in detail the disclosure and issued claims in U.S. Patent No. 5,799,320 (the "'320 Patent").

6. Based upon the above mentioned review and my experience and background (as set forth in detail in my Declaration dated 23 August 2004) I provide the following comments and remarks.

7. Prior to the filing of the patent application on August 23, 1989 which issued as the '320 Patent (in shorthand, "by and before 1990"), one of ordinary skill would have understood a personal computer or "PC" to be a computer whose hardware architecture complied with the IBM Personal Computer architecture. This architecture was designed around the Intel 80x86 microprocessor family, and utilized IBM licensed BIOS software. In the late 1980s and certainly by and before 1990, the 80486 microprocessor had been announced although most PCs were still using the 80386 microprocessor. The raw speed of these two microprocessors was in the 25-50 MHz range. Both the 80386 and 80486 were capable of 32-bit, multitasking CPU operation, although in the PC configuration (using the then current Microsoft WINDOWS application environment), these processors only supported the use of 16-bit addresses for instructions and data because of the limited capabilities of the WINDOWS 386 operating systems then available for PCs (as discussed below).

8. By and before 1990, several different vendors produced "workstations," including Sun, Apollo, Hewlett Packard and others (collectively, "Sun class workstations" or "workstations"). Workstations used multitasking operating systems ("OS") – often a variant of UNIX, but in Apollo's case, its own proprietary OS. Workstations were designed to operate as a client computer in a network configuration and took advantage of the 32-bit processing capability of the CPU and the 32-bit addressing capability of the UNIX OS. In short, by and before 1990, PCs and workstations substantially differed based upon the OSs commonly used and the number of bits used to address instructions and data. One of ordinary skill would have understood that PCs were significantly less capable than workstations by and before 1990.

9. On May 22, 1990, the Microsoft WINDOWS 3.0 OS was released. Since WINDOWS 3.0 was released after the filing of the Hayden patent application (on January 3, 1989) but before the issuance of the Hayden patent (on May 22, 1990), one of ordinary skill would have understood that the PCs disclosed and discussed in Hayden used an OS that was not newer than WINDOWS 3.0.

10. Further, assuming a Hayden PC had WINDOWS 3.0 capability, the primary incremental increase in OS capability would have been that WINDOWS 3.0 provided more comprehensive support for application developers in the form of a new SDK. In particular, the current Microsoft web page entitled "Windows Products and Technologies History" indicates that WINDOWS did not explicitly support network-based computing until 1993:

> A superset of Windows 3.1, Windows for Workgroups 3.11 added peer-to-peer workgroup and domain networking support. For the first time, Windows–based PCs were network-aware and became an integral part of the emerging client/server computing evolution.

The form of multitasking that was supported by the WINDOWS Version 2.03 ("WINDOWS 386") was a variant of WINDOWS 2.0, and was not an OS kernel implementation. Rather, it was an implementation that built on the earlier single-task execution environment. It used the OS driver mechanism to add an Extended Memory Model (EMM) and used the hardware time interrupt to support multiprogramming (multitasking) to support concurrent application processes. WINDOWS 386 executed in a 16-bit application environment, supported by an extension to the old MS-DOS operating system. PCs running WINDOWS 386 were not as robust (secure) nor as fast (high performance) as the then-contemporary 32-bit multiprogramming environments used in Sun class workstations. That is, PCs, which presumably ran WINDOWS 386, could not have supported the functions described as being necessary to implement Sarin's various embodiments. These functions are discussed in greater detail below. Since one of ordinary skill would have understood Sarin reference to "workstations" as referring to Sun class workstations and not as referring to the substantially less capable PCs then available, there would have been no motivation to substitute a workstation for a PC.

11. Likewise, one of ordinary skill would have understood Hayden's reference to a "personal computer" as referring to an IBM Personal Computer compliant hardware platform or a clone thereof (an "IBM PC"). By and before 1990, an IBM PC would have included a CPU equivalent to an Intel 80x86 (x is 3 or 4) microprocessor with a cycle time of no more than 50 MHz. Further, one of ordinary skill would have inferred that the PC discussed in Hayden used the WINDOWS 386 operating system or a closely related version. For at least the reasons set forth below, one of ordinary skill would have understood that a WINDOWS 386 equipped IBM

PC was not capable, by itself, of supporting the functions and application behavior described in Hayden's Figures 1-18 and associated text.

12. In Hayden, the host computer is described as a repository of information that can be downloaded from the host computer into a participant's PC. In 1990, one of ordinary skill in the client-server computing art would have interpreted Hayden's host computer as being a centralized server and/or timeshared computer, comparable to a DEC VAX because these machines, unlike PCs then available, were designed to support concurrent activity through the extensive use of conventional CPU multiprogramming and multitasking technology. One of ordinary skill would not have looked to a PC to provide the functions of host computer, as set forth in Hayden.

13. In contrast to Sarin, in Hayden the host computer is not used to implement any significant part of the collaboration technology. The Hayden host computer does not establish collaboration conferences, route information among participants, or otherwise support collaboration. It is a file repository. Thus, one of ordinary skill would not have been motivated to substitute Sarin's host computer with Hayden's.

14. One of ordinary skill by and before 1990 would have recognized that real-time conferencing system software were necessarily computer and network intensive. This is because real-time conferencing applications, as described by Sarin must have been capable of, at least:

a. Satisfying basic application requirements (such as Sarin's RTCAL calendar coordination system and his shared bit-map MBLINK system linked with an internetwork congestion-control analysis program)(Sarin pp. 400-404);

b. Performing conference management functions/requirements (see Sarin pp. 400-401);

c. Supporting the generation of user interfaces and shared & private data views (Sarin pp. 405-406);

d. Providing access and concurrency control (Sarin pp. 406-407); and

e. Facilitating data movement, while meeting real-time constraints (Sarin pp 408-409).

15. One of ordinary skill in the art would have recognized that Sarin's applications were 32-bit applications, which were executed by large timeshared computers or, under Sarin's "assumed" configuration, by Sun class workstations. It is important to note that Sarin concludes that even with the embodiments identified in the paper, they have ***performance shortfalls***:

> We have identified two contrasting approaches to constructing real-time conferencing systems: (1) sharing existing single-user interactive programs by means of virtual terminals, and (2) writing new application programs that interact with multiple users and can treat each one differently (in terms of command context and access control). The former approach is easy to implement but limited in functionality, while the latter can provide better functionality and performance, but requires more work to implement.
> (Sarin, p. 419)

Later in the Conclusion, Sarin says:

> As experience is gained with the use of real-time conferencing systems, it will become clear which kinds of more advanced functions users need and where the performance enhancement techniques we have outlined can be fruitfully applied. It will then be appropriate to construct more powerful systems that remove the limitations of existing systems.
> (Sarin, p. 419)

That is, Sarin teaches that even his prototype implementations that used 32-bit computers with operating systems designed explicitly to support multiprogramming/multitasking, had inadequate performance for practical real-time conferencing systems. Hence, one of ordinary skill would not have been motivated to substitute Sarin's mainframes, DEC VAXs and/or Sun class workstations with Hayden's personal computers.

16. In view of the foregoing, one of ordinary skill in the art, by and before 1990, would have concluded that, in general, it would not have been desirable, let alone feasible, to substitute any of Sarin's mainframes, DEC VAXs and/or "workstations" with any IBM PC, including those described by Hayden.

17. Sarin describes two different software organizations and three different embodiments of those organizations which support future real-time conferencing system design. These are discussed in greater detail hereinbelow. In view of the two software organizations and the three

embodiments described in Sarin, it is my opinion that there is no suggestion or motivation in Sarin and/or Hayden, to one of ordinary skill, that it was possible let alone desirable, to combine the ideas in Sarin's paper with those in Hayden's patent by replacing any of a virtual terminal controller, central controller, or a distributed controller with a PC of the type described in the Hayden patent, i.e., an Intel 80386/80486 running WINDOWS 386.

18. Sarin's two software organizations are:

a. Sharing existing, single-user application programs (Sarin Figure 15.3(a));

b. Multiuser application programs (Sarin Figure 15.3(b)). Sarin states that "What distinguishes a multiuser program from a single-user application program is that it explicitly takes into account the identity of different participants in a conference." (Sarin pp. 412-413)

19. The three embodiments described, in Sarin, are specific network implementation protocols. These are:

a. A virtual terminal controller implementation (Figure 15.3(a)) which supports single-user application programs;

b. A conference controller implementation (Figure 15.3(b)) wherein a single, centralized computer is assumed to coordinate all conference activities (called the central controller approach); and

c. A distributed controller implementation (described in words on pages 415 and 417) where each workstation executes its own copy of the multiuser application and of the file being edited and handles all communication with the other workstations in the real-time conference.

20. Regarding the virtual terminal controller embodiment (Figure 15.3(a)), one of ordinary skill would have understood Sarin as disclosing that a single-user application program was executed on a host computer that was a timesharing mainframe, DEC VAX or, for an "assumed" configuration, a Sun class workstation, i.e., a 32-bit execution environment with a native multiprogramming OS. Further, one would have understood that the virtual terminal

controller (as implemented in software in the host computer) performed at least the following tasks:

a. Modified/created information;

b. Propagated screen updates from the host computer site to remote workstations where a copy of the common screen was maintained

c. Processed updates to the screen(s) so that the updates were applied and the information redisplayed for the host computer's local user to view, when the host computer had a user;

d. Multiplexed input events sent to it by the multiplicity of remote workstations;

e. Received and delivered commands, as a sequential stream, for the application program (in the host computer) to execute; and

f. Performed multiple conference management functions (see Sarin pp. 400-401, and page 417).

21. Based upon the functions performed by a virtual terminal controller, one of ordinary skill would have understood the host computer was a device capable of 32-bit execution and efficient multiprogramming such as a timesharing mainframe computer, a DEC VAX or, for the "assumed" configuration, a Sun class workstation. Also, one of ordinary skill would have understood Sarin as disclosing that the conference management tasks were implemented by that same device (i.e., the timesharing mainframe computer or the Sun class workstation) functioning as the virtual terminal controller.

22. In contrast to Sarin, Hayden explicitly uses PCs to perform extremely limited conference management functions (see the discussion of Figures 3 to 18). That is, Hayden explicitly uses a Public Branch Exchange (PBX) and a data bridge to handle Sarin's virtual terminal controller tasks of propagating screen updates from the PBX network to remote PCs, multiplexing input events sent to the PBX by the various PCs, receiving and delivering

commands as a sequential stream for the application program (in one of the PCs) to execute; and performing multiple conference management functions.

23. Stated succinctly, if one of ordinary skill were to be adapt Sarin's approach in view of Hayden's disclosure, then the device that functioned as the virtual terminal controller and performs the above identified functions would have been a combination of a PBX/data bridge and a host (time-shared) computer. Further, even under Sarin's "assumed" configuration, where a Sun class workstation is the virtual terminal controller, one of ordinary skill would not have been motivated or found any suggestion in Sarin and/or Hayden to substitute a Sarin workstation (functioning as a controller) with a Hayden PC. One of ordinary skill would have found it to be undesirable to use a Hayden PC for conference management and other necessary functions because, in Hayden, the PBX - not the PCT - performs these functions. Thus, one of ordinary skill would not have looked to substitute Sarin's workstations (when "assumed" to be the controller) with one of Hayden's PCs.

24. Regarding the central controller embodiment in Sarin (Figure 15.3(b)), one of ordinary skill would have understood that the multiuser application described in Sarin was executed on a timesharing mainframe computer, a DEC VAX or a Sun class workstation. Specifically, one of ordinary skill would have understood that the central controller required a 32-bit execution environment with a native multiprogramming OS because the central controller must have been capable of performing the following tasks:

a. Modifying and creating information that is identified and communicated as an abstract object rather than a simple bit-map screen image;

b. Propagating the object updates (instead of bit- maps) from the workstation executing the application program to other workstations, each of which maintains a copy of each abstract object (when a remote workstation receives an object updates, it applies the update to the abstract object, then the local machine displays the modified object according to its local model for viewing objects);

c. Multiplexing incoming application commands sent from any of the multiplicity of remote workstations;

d. Delivering received commands to the application program (i.e., application workstation) as a sequential stream; and

e. Performing multiple conference management functions (see Sarin pp. 400-401, and page 417).

25. As in the virtual terminal controller design, in the central controller embodiment, one of ordinary skill would have understood that the host computer was capable of 32-bit execution and efficient multiprogramming and would have looked to using a timesharing mainframe, a DEC VAX computer or, for the "assumed" configuration, a Sun class workstation. Also, one of ordinary skill in the art would have presumed that the conference management tasks were to be implemented as a process on the timesharing mainframe/DEC VAX/workstation.

26. On page 417, Sarin writes "If all communication goes through a central controller, the number of virtual circuits needed is linear (N-1, assuming the controller is itself a workstation) and depends on the number of workstations." One of ordinary skill in the art would have understood that Hayden's patent describes an embodiment of a centralized communications architecture, i.e., one where the PBX , data bridge, and associated components implement a centralized network to distribute object updates and collect application commands. Thus, one of ordinary skill would have understood that the PBX and not Hayden's PCs perform the functions identified above.

27. Based upon the foregoing, one of ordinary skill would not have been motivated to substitute Sarin's workstations with Hayden's PCs when implementing Sarin's central controller embodiment.

28. Regarding the distributed controller embodiment (discussed in Sarin on pages 415 and 417), one of ordinary skill would have recognized that this embodiment differs from the central controller embodiment primarily in the way that information is distributed among the participating workstations. That is, on page 417, Sarin writes "If workstations need to communicate directly, however, the number of virtual circuits, N*(N-1)/2 grows as the square of the number of nodes." One of ordinary skill would have also recognized that this embodiment requires every workstation to contain a copy of the file being edited.

29. Further, one of ordinary skill would have recognized that Sarin's distributed controller embodiment suffered from additional performance problems related to virtual circuit network technology then available because Sarin specifically so stated as follows: "[w]hile we have argued that direct workstation-to-workstation communication can be useful in improving response time [a performance improvement], it may instead have a detrimental effect on response time if the overhead of a large number of virtual circuits causes the message transmission delay to increase; this may well happen for large values of N, say greater than four or five." (Sarin, page 417)

30. The above performance problems, which Sarin implied occurred even when using time-shared mainframes, DEC VAX computers and Sun class workstations would have led one of ordinary skill in the art to seek greater processing performance and not the lesser performance available in PCs. Therefore, one of ordinary skill would have recognized that a PC of the type Hayden described was not suggested for use a workstation in support of a Sarin distributed control embodiment. One would not have substituted a Sarin workstation with a Hayden PC when implementing a distributed control embodiment.

31. **Based upon the forgoing, it is my opinion that one of ordinary skill would not have been motivated nor found any suggestion in Sarin or Hayden to substitute Sarin's workstations with Hayden's PCs.**

32. The Declarant states that all of the above statements made of the Declarant's own knowledge are true. The Declarant further states that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Dated: 14 March 2005

Gary J. Nutt, Ph.D.